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TECHNICAL MANUSCRIPT 585

GREENHOUSE SCREENING OF PEANUT FOR RESISTANCE TO PEANUT RUST

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DEPARTMENT OF THE ARMY
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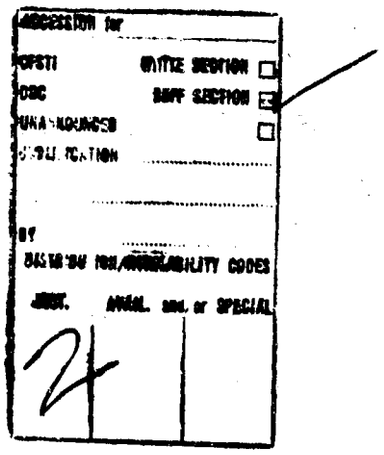

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K.R. Bromfield

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Plant Pathology Division
PLANT SCIENCES LABORATORIES

Project 1B562602AD09

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ABSTRACT

Accessions of Arachis hypogaea, A. glabrata, A. monticola, and several other legumes were tested to Puccinia arachidis cultures PR-1-66 (from Puerto Rico) and TEX-1-67 (from Frio County, Texas). Accessions PI 314817 and PI 315608 of A. hypogaea were physiologically resistant to both rust cultures. One hundred seventy-one accessions tested to both cultures, 68 tested only to PR-1-66, and four tested only to TEX-1-67 were susceptible. Five accessions of A. glabrata were immune, six non-peanut legume species were also immune, and one accession of A. monticola produced only small, weakly sporulating pustules when tested to PR-1-66.

I. INTRODUCTION*

Prior to 1965, rust (Puccinia arachidis Speg.) of peanut (Arachis hypogaea L.) had appeared only sporadically in the United States, only in scattered fields late in the season, and never in epidemic proportions. In 1965, and again in 1966, peanut rust appeared in south-central Texas much earlier than previously and in both years attained epidemic proportions in many fields.** Rust was also observed during the 1967 and 1968 cropping seasons in both irrigated and nonirrigated peanut fields.

Published information on varietal reaction to peanut rust, although sparse, indicates that genotypes with pronounced resistance to rust are uncommon. KenKnight*** reported that 50 varieties exposed to artificial and natural inoculation under field conditions in Texas became rusted. Mazzani and Hinojosa**** observed 254 varieties exposed to natural infection in the field in Venezuela in 1959 and 1961. They classified as resistant only one variety, Tarapoto. Twelve other varieties were reported to have some resistance to peanut rust but the nature of this resistance was not defined. Interpretation of the data suggests that pustules of a susceptible type were present on these varieties but in distinctly fewer numbers than on the other 241 varieties. Thus it appears that they may possess field resistance. McVey***** observed approximately 1,500 peanut accessions exposed to natural rust infection in USDA field plots in Puerto Rico in 1964. Only Tarapoto was markedly resistant, although some accessions were noticeably less rusted than others. Accessions of A. glabrata were immune.

In view of the possible change in the peanut rust situation in Texas, the possible threat to southeastern peanut fields posed by established peanut rust in the islands of the Caribbean, and the paucity of information on sources of resistance to peanut rust, a search for rust resistance in A. hypogaea and related species was initiated. Accessions of A. hypogaea were screened in the greenhouse to two cultures of peanut rust. During the course of the work some accessions of A. glabrata and A. monticola and some varieties of other legumes were also tested.

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* This report should not be used as a literature citation in material to be published in the open literature. Readers interested in referencing the information contained herein should contact the senior author to ascertain when and where it may appear in citable form.

** Harrison, A.L. 1967. Some observations on peanut leaf rust and Cercospora leaf spot in Texas. Plant Dis. Rep. 51:687-689.

*** KenKnight, G. 1941. Peanut diseases in certain Texas counties in 1941, with notes on occurrence of peanut rust. Plant Dis. Rep. 25:587.

**** Mazzani, B.; Hinojosa, S. 1961. Diferencias varietales de susceptibilidad a la roya del mani en Venezuela. Agronomia Tropical (Venezuela) 11(1):41-45.

***** McVey, D.V., personal communication.

II. MATERIALS AND METHODS

Uredospores from rusted peanut leaves collected near Aguadilla, Puerto Rico, in August 1966 (culture PR-1-66) and in Frio County, Texas, in September 1967 (culture TEX-1-67) were increased in the greenhouse on plantings of a Spanish-type peanut (6216 Spanish, W. Atlee Burpee Company). Uredospores harvested from the increase plantings were placed in small glass tubes (10 to 50 mg/tube) and stored in a liquid nitrogen refrigerator until used to inoculate sets of test plants. Uredospores of PR-1-66 and TEX-1-67 have been deposited in the American Type Culture Collection.*

Seeds of Plant Introduction Accessions of A. hypogaea, A. glabrata, and A. monticola were provided by the USDA. Seeds of other legumes were obtained locally from commercial sources. Individual seeds were planted in 4-inch clay pots containing sandy loam. The pots were placed in galvanized iron pans on greenhouse benches and irrigated daily from the bottom. Greenhouse temperature varied daily and seasonally. The minimum night temperature was usually near 20 to 25 C. During late fall, winter, and early spring the afternoon maxima were near 30 C, but during summer the daytime maxima frequently exceeded 40 C.

Peanut plants were inoculated 4 or 5 weeks after seeding, other legumes about 4 weeks after seeding. Plants were dusted with a mixture of one part uredospores and five parts talc at the rate of about 0.3 mg of spores per plant.

Inoculated plants were incubated in one of two ways to permit infection. In some tests inoculated plants were transferred to dew chambers and held under dew for 16 to 20 hours at an ambient air temperature of 20 to 25 C. They were then removed from the chambers and returned to greenhouse benches. In other tests, plants were inoculated in place on the greenhouse bench, covered with a tent of polyethylene sheeting, and misted overnight (16 to 18 hours). Both methods consistently permitted abundant infection.

Sets composed of multiple pots of each of several accessions were inoculated at one time. Depending on seed availability and seed germinability, one to eight plants of a given accession were inoculated with each rust culture. Pots of 6216 Spanish or Starr accompanied each set of accessions. Each of these varieties was very susceptible to infection by both rust cultures, and large abundantly sporulating pustules developed on each. The reaction of each test accession was compared with that of the susceptible controls 15 to 20 days after inoculation.

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* 12301 Parklawn Drive, Rockville, Maryland 20852.

III. RESULTS AND DISCUSSION

Of 173 A. hypogaea accessions tested to both rust cultures, 68 tested only to PR-1-66, and four tested only to TEX-1-67, all but two were susceptible.*

Accessions PI 314817 and PI 315608 were physiologically resistant to both rust cultures. The number of pustules that developed on these two accessions was also consistently fewer than the number developing on Starr in a given inoculation. Both accessions, along with the variety Tarapota, previously reported resistant to peanut rust by Mazzani and Hinojosa,** were repeatedly tested throughout a period of over 1 year. In all cases the reaction was of a resistant type and was essentially similar on all three hosts (Fig. 1). Characteristically, a zone of necrotic tissue (variable in color: tan through reddish brown to purplish black) surrounded each small uredosorus that developed. Frequently small, roughly circular areas of dark tissue developed on inoculated leaves. These areas were of the general size of normal uredial pustules on Starr but no sporulation was visible within them. Infrequently, small pustules without surrounding necrotic tissue were present among the pustules and flecks described above. The effect of environmental factors on symptom expression was not systematically investigated under controlled conditions.

Although the rust reactions of the two accessions and Tarapoto were indistinguishable, apparently each of the trio represents a distinct genotype. The testa color of PI 314817 is brownish tan, that of PI 315608 is light tan, and that of Tarapoto is purple. In addition, PI 314817 usually produces four seeds per pod; PI 315608 usually produces two seeds per pod. Seed of accession PI 314817 had originally been collected by Dr. D.H. Timothy in 1966 in a store in Juanjui, Province of Mariscal Caceres, San Martin, Peru. Accession PI 315608, sent to the USDA by Professor A. Ashri, Israel, is identified as "Line 136, selection from United States introductions."

Rust reaction was also observed on detached leaflets of Starr, Tarapoto, PI 314817, PI 315608, and several other accessions in several experiments. The detached leaflets were dusted with rust spores, misted with a fine spray of water, placed on moistened filter paper enclosed in petri dishes, held in darkness at 20 to 25 C for 16 to 18 hours, and then placed on a laboratory bench at 25 C. Subsequently they were observed for reaction. In all cases, the reaction type characteristic for intact leaflets on the plant also developed on detached leaflets.

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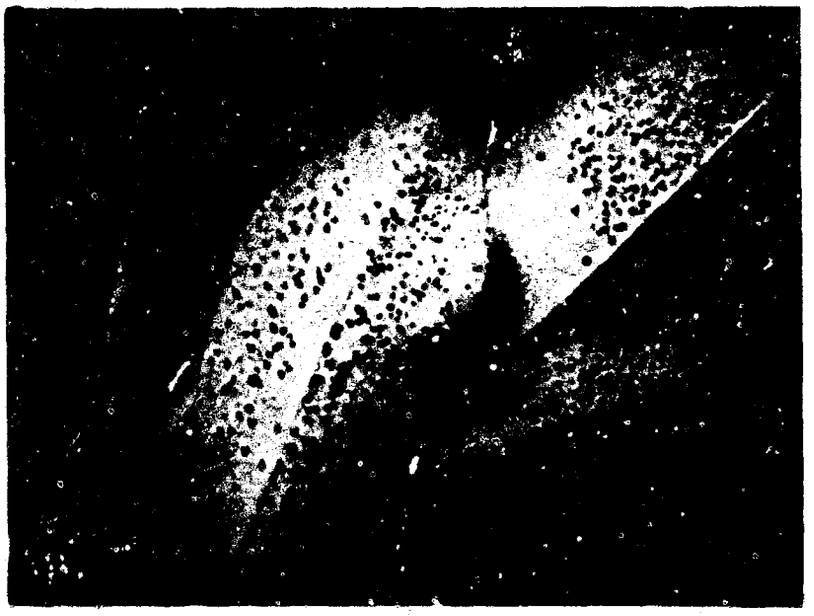
* An annotated list of the Plant Introduction Accession Numbers and the number of individual plants of each tested to each rust culture appears in the Appendix.

** Mazzani, B.; Hinojosa, S. 1961. Diferencias varietales de susceptibilidad a la roya del mani en Venezuela. Agronomia Tropical (Venezuela) 11(1):41-45.



A

B

FIGURE 1. Abaxial Surfaces of Peanut Leaflets Infected with Peanut Rust (TEX-1-67). A, susceptible reaction of Starr; B, resistant reaction of PI 315608.

Five accessions of A. glabrata were tested to culture PR-1-66. All were immune. There was no macroscopically visible evidence of rust on any of the plants of A. glabrata, although companion plants of 6216 Spanish grown, inoculated, incubated, and held along with them produced an abundance of susceptible-type pustules. The accessions, their source, and the number of plants tested were: PI 118457, Brazil, five plants; PI 231318, Brazil, two plants; PI 262141, Bolivia, two plants; PI 262287, Brazil, two plants; and PI 262801, Argentina, two plants.

Two plants of A. monticola, accession PI 263393 from Brazil, were tested to culture PR-1-66. Visible rust pustules developed but they were very small and weakly sporulating in comparison with those developing on companion plants of 6216 Spanish.

Rust did not develop on any of the following legumes inoculated with PR-1-66 under conditions favoring an abundance of pustules on companion plants of 6216 Spanish or Starr: Glycine max L. (varieties Dansei, Clark, Hood, Watson), Medicago sativa L. (alfalfa), Melilotus alba (sweet clover), Phaseolus vulgaris L. (varieties Black Valentine, Penn Salt, Red Kidney, Tender Green), Pisum sativum L. (variety Alaska), and Trifolium pratense L. (red clover).

Although the rust isolates used in this screening program came from two widely separated geographical sites, they could not be separated into two physiological races on the basis of reaction types induced. None of the accessions tested to both cultures functioned as a differential.

The tests reported here were not designed to provide information on aspects of resistance other than physiologic resistance. However, the impression was strong that certain accessions of A. hypogaea, even though supporting pustules with abundant sporulation, were less susceptible to infection than others. This facet of resistance is now being investigated quantitatively.

APPENDIX

PEANUT ACCESSIONS SCREENED TO PEANUT RUST IN GREENHOUSE AT FORT DETRICK, 1967 TO 1969

PI No.[a]	Type[b]	No. of Plants Tested to PR-1-66	No. of Plants Tested to TEX-1-67	Immediate Origin of Accession	Remarks
RESISTANT ACCESSIONS					
314817	S	26	37	Peru	'Mani.' Store in Juanjui, Province of Mariscal Caceres, San Martin
315608	V	13	11	Israel	Line 136. Selection from US introductions
SUSCEPTIBLE ACCESSIONS					
221063		8		Brazil	
290978		8		Peru	
292955	S	2	1	Rep. So. Africa	'Jumbo Giant' ex Rhodesia
294647	S	2	2	Thailand	'Dak'
294652	S	3	3	Thailand	'Rayong' Thai variety
294654	S	2	2	Thailand	'Sukotani' Thai variety
295169	S	3	3	Israel	'Spanish Common'
295171	S	2	2	Israel	'Bambey #1'
295173	S	2	3	Israel	'Brown Long Manyema A28'
295174	S	3	2	Israel	'Brown Manyema B-730-2'
295185	V	3	3	Israel	'Egyptian Giant'
295188	V	3		Israel	'Fanah'
295190	S	2	3	Israel	'Hakyoto'
295190S	V	2		Israel	
295191	S	2	2	Israel	'Hezeki-Zaikai-I-go'
295192	S	3		Israel	'Honkong Chair-Chai'
295193	S	2	2	Israel	'Improved Small Japan'
295195	V	2	1	Israel	'Jumbo'
295199	V	3	2	Israel	'Karum 1'
295205	V	2		Israel	'K2-87'
295210	S	3		Israel	'Mevitunde 3'
295215	S	3	3	Israel	'Mevitunde 8'
295223	V	1	1	Israel	'Bentar Bunch Mani.' Pinter Sel. 1
295743	S	3	2	India	'Manyema Mayasa.' Sudan
295752	S	3	2	India	'Renga da Fonderna' (All2 Pares)
295981	V	1		Nigeria	
297389A	V	2			
298829R	V	1	1	Rep. So. Africa	'Tyina.' Pods small 2-seeded
298834R	V	3		Rep. So. Africa	'Sekelembive.' Pods medium 2- to 3-seeded
298844R	V	2	2	Rep. So. Africa	'Chine.' Pods large 2-seeded
298844RS	V	3	2	Rep. So. Africa	'Chine.' Pods large 2-seeded
298857	V	2		Rep. So. Africa	'Mpongo.' Pods small 2-seeded
298857R	V	3	2	Rep. So. Africa	'Mpongo.' Pods small 2-seeded

a. Accession numbers assigned by Plant Introduction Section, Crops Research Division, Agricultural Research Service, US Department of Agriculture, Beltsville, Maryland.
b. S indicates Spanish, V Virginia, and Val Valencia types.

PI No.[a]	Type[b]	No. of Plants Tested to PR-1-56	No. of Plants Tested to TEX-1-67	Immediate Origin of Accession	Remarks
298863R	S	3	2	Rep. So. Africa	Ex Gambia. Pods very small 2-seeded
298873R	S	2	2	Rep. So. Africa	
299468	S	2	2	Rep. So. Africa	
300239R1	V	2	3	Nigeria	'Kongwa Runner.' High yield at Mokwa
300239R2	V	3	3	Nigeria	'Kongwa Runner.' High yield at Mokwa
300240R	V	3	3	Nigeria	'Matavere Bunch.' Earlier than spreading bunch
300242	V	2		Nigeria	'Slorin Bunch.' Plants large, coarse, long season
300586R1	V	3	3	Viet Nam	'Florispan'
300586R2	S	3	3	Viet Nam	'Florispan'
300590	S	3	3	Viet Nam	'Natal Common'
302404	V	3	2	India	'T.M.V. 3'
304299	V	2	2	France	Received as A. salvagem
305069	S	3	3	Thailand	Local name 'Thua Khut'
306228	S	3	2	Senegal	
306363	S	3	3	Israel	'Valencia-R-56(1)'
311003	V	3	2	British Guiana	
311003S	V	1	1	British Guiana	
311263	S	3	2	Rep. So. Africa	'Senegal 48-15' X 'Natal Common'
311264	S	3	2	Rep. So. Africa	'Mevitunde' X 'Natal Common'
311265	S	3	1	Rep. So. Africa	'Mevitunde' X 'Natal Common Red'
311266	V	3	3	Rep. So. Africa	'Natal Common' X 'Kenyoma'
312141	V	3	3	India	Reported resistant to leaf spot
313118	S	2	3	Taiwan	Variety bred in Taiwan
313119	S	3	3	Taiwan	Variety bred in Taiwan
313120	S	3	3	Taiwan	Variety bred in Taiwan
313121	S	3	2	Taiwan	Variety bred in Taiwan
313122	S	3	3	Taiwan	Variety bred in Taiwan
313123	S	3	3	Taiwan	Variety bred in Taiwan
313124	S	3	2	Taiwan	Variety bred in Taiwan
313125	S	3	3	Taiwan	Variety bred in Taiwan
313126	S	3	3	Taiwan	Variety bred in Taiwan
313127	S	3	3	Taiwan	Variety bred in Taiwan
313128	S	3	3	Taiwan	Variety bred in Taiwan
313129	V	2		Taiwan	Native variety
313130	V	1		Taiwan	Native variety
313131	S	3	3	Taiwan	Native variety
313132	S	3	3	Taiwan	Native variety
313133	S	3	1	Taiwan	Native variety
313134	S	3	1	Taiwan	Native variety
313135	S	3	3	Taiwan	Native variety
313136	S	3	2	Taiwan	Native variety
313137	S	3	3	Taiwan	Native variety
313138	S	3	3	Taiwan	Native variety
313139	S	3	3	Taiwan	Native variety
313140	S	3	3	Taiwan	Native variety
313141	S	3	3	Taiwan	Native variety
313142	S	2	3	Taiwan	Native variety
313143	S	3	2	Taiwan	Native variety
313143S	S	2	3	Taiwan	Native variety
313144	S	2	3	Taiwan	Native variety
313145	S	3	3	Taiwan	Native variety
313146	S	3	2	Taiwan	Native variety

PI No.[a/]	Type[b/]	No. of Plants Tested to PR-1-66	No. of Plants Tested to TEX-1-67	Immediate Origin of Accession	Remarks
313149	S	3	3	Taiwan	Native variety
313150	S	3	3	Taiwan	Native variety
313151	S	3	1	Taiwan	Native variety
313152	V	3	3	Taiwan	Native variety
313153	V	3	1	Taiwan	Native variety
313154	V	3	2	Taiwan	Native variety
313155	V	3	1	Taiwan	Native variety
313156	S	3	2	Taiwan	Ex China
313157	S	3	3	Taiwan	Ex China
313158	S	2	3	Taiwan	Ex China
313159	S	3	2	Taiwan	Ex China
313160	S	2	2	Taiwan	Ex China
313161	S	3	1	Taiwan	Ex China
313162	S	2	2	Taiwan	Ex China
313162S	S	3		Taiwan	Ex China
313163	V	3	1	Taiwan	Ex China
313165	V	3	2	Taiwan	Ex China
313166	V	3	3	Taiwan	Ex China
313166S	V	1	2	Taiwan	Ex China
313167	V	1	3	Taiwan	Ex China
313168	S	2	3	Taiwan	Ex Japan
313169	S	2	2	Taiwan	Ex Japan
313170	S	3	3	Taiwan	Ex Japan
313171	S	3	3	Taiwan	Ex Japan
313171S	S	3	2	Taiwan	Ex Japan
313172	S	3		Taiwan	Ex Japan
313172S	S	3	2	Taiwan	Ex Japan
313173	S	3	1	Taiwan	Ex Japan
313175	S	1		Taiwan	Ex Japan
313176	S	3		Taiwan	Ex Japan
313177	S	3	1	Taiwan	Ex Japan
313178	S	1	1	Taiwan	Ex Japan
313179	S	3	2	Taiwan	Ex Japan
313180	S	2	3	Taiwan	Ex Japan
313181	S	2	2	Taiwan	Ex Japan
313182	S	2	2	Taiwan	Ex Ryukyu
313183	S	1	2	Taiwan	Ex Philippines
313184	S	2	3	Taiwan	Ex Philippines
313185	S	3	1	Taiwan	Ex Philippines
313186	V	2	2	Taiwan	Ex Philippines
313187	V	1		Taiwan	Ex Philippines
313188	S	3		Taiwan	Ex Viet Nam
313189	S	3	1	Taiwan	Ex Viet Nam
313190	S	3	3	Taiwan	Ex Viet Nam
313191	S	3	2	Taiwan	Ex Viet Nam
313191S	S	3	2	Taiwan	Ex Viet Nam
313192	S	3	3	Taiwan	Ex Viet Nam
313193	S	2	1	Taiwan	Ex Viet Nam
313193S	S	3	2	Taiwan	Ex Viet Nam
313194	S	2		Taiwan	Ex Malaysia
313195	S	2	1	Taiwan	Ex Israel
313196	S	3	1	Taiwan	Ex Israel
313197	V	1		Taiwan	
313198	V	3	3	Taiwan	
313200	S	2	3	Taiwan	Ex Congo
313200SF	S	2	3	Taiwan	Ex Congo
313200SR	S	3	3	Taiwan	Ex Congo
313201	S	3	3	Taiwan	Ex Congo
313202	S	3	3	Taiwan	Ex Cuba
313203	S	3	3	Taiwan	Ex Brazil
313204	S	3	2	Taiwan	Ex Brazil
314048	S	3	3	Dahomey	

PI No.[a]	Type[b]	No. of Plants Tested to PR-1-66	No. of Plants Tested to TRX-1-67	Immediate Origin of Accession	Remarks
314048X	S	2	2	Dahomey	
314818	V	3	1	Peru	'Mani' from store in Picota, San Martin
314893	V	2	3	Nigeria	'Georgia Bunch' (hybrid). Seeds large. Originally from Georgia
314894	S	2	2	Nigeria	'Georgia Bunch' (hybrid). Seeds small. Originally from Georgia
314896	S		2	Nigeria	'Toro Valencia Bunch.' Originally from Nigeria
314897		3	3	Nigeria	Ex 'Golodi Jumbo Runner.' Originally from Nigeria
314898	V	1	1	Nigeria	Ex 'Italy Virginia Bunch.' Seeds large. Originally from Italy
3148988	V	2		Nigeria	Ex 'Italy Virginia Bunch.'
314899	V	2	1	Nigeria	'Natal Runner.' Seeds medium large. Unusual Nigeria runner
314900	V		1	Nigeria	'Castle Cary Bunch.' Originally from India
314980	S	2	2	USSR	'WNIIMK 433' (Vir 263) Krasnodar Territory
315605	V	2		Israel	'Dixie Anak' Selection from 'Dixie'
315606	V	3	2	Israel	'G.2.' Selection from Georgia Bunch
315607	V	2	1	Israel	Line 123. Selection from US introduction
315609	V	1		Israel	'NC 2'
315611	S	2	2	Israel	Pearl White
315612	S	3	3	Israel	'Pintar Bunch.' Goldin #167 from E. Africa
315613	S	1		Israel	'Schwartz 21.' Goldin #117 from Java
315614	S	1		Israel	'Spanish No. 9'
315615	S	3	2	Israel	'Tatui 55.' Goldin #110 from Japan
315616	V	1	2	Israel	'V 4.' Selection from 'Virginia Bunch Improved'
315617	V	3	2	Israel	'Virginia Adox
315618	V	2	1	Israel	'VSM.' Equals 'Virginia Bunch Improved'
315621	V	3	2	Israel	Selection from V4(PI 315616) X G2(PI 315606)
315622	V	2	3	Israel	Selection from V4(PI 315616) X G2(PI 315606)
315623	V	1	1	Israel	Selection from G2(PI 315606) X V4(PI 315616)
315624	V	1	1	Israel	Selection from G2(PI 315606) X V4(PI 315616)
315625	V	2	1	Israel	Selection from G2(PI 315606) X V4(PI 315616)
315627	V		1	Israel	'Dixie Anak' (PI 315605) X V4(PI 315616)
315629	V	1		Israel	V4(PI 315616) X NC 2 (PI 315609)
315630	V	1		Israel	V4(PI 315616) X 'Dixie Anak' (PI 315605)

PI No.[a]	Type[b]	No. of Plants Tested to PR-1-66	No. of Plants Tested to TEX-1-67	Immediate Origin of Accession	Remarks
315631	V	1	3	Israel	V4(PI 315616) X 'Dixie Anak' (PI 315605)
315635	V		1	Israel	
315637	V	2		Israel	
331269		6	6	Argentina	Mutation induced by irradiation. Plant small, compact; pods 3-segmented.
331270		6	5	Argentina	Mutation induced by irradiation. Plant small, compact; pods 3-segmented.
331287		6	5	Argentina	Material in testa inheritance study
331288		6	5	Argentina	Material in testa inheritance study
331300	V	6	6	Argentina	Virginia bunch. Pods small; branches many. Intervarietal-interspecific hybrid
331305		6	3	Argentina	Valencia-Virginia from interspecific cross involving A. monticola
331306	Val	6	6	Argentina	From interspecific cross involving A. monticola
331307	Val	6	6	Argentina	Valencia bunch. Leafy. Pods 3-segmented. Cross involving 'Overo' as one parent.
331312B		6	6	Argentina	
331312R		6	6	Argentina	
331313	Val	6	6	Argentina	'Colorado Manfredi' X ('Blanco Rio II' X 'Veteado de Peru')
331324	Val	6	6	Argentina	'Campine V-52' Origin Campinas
336906		6	4	Brazil	Valencia and Spanish pods; testa dark purple
336916	Val	6	6	Brazil	Testa red
336917	Val	6	6	Brazil	Testa flesh
336920		6	6	Brazil	Testa red
336921		6	4	Brazil	Testa red
336922		6	6	Brazil	Testa red
336924	Val	6	5	Brazil	Testa red
336925		6	4	Brazil	Testa red
336926		6	6	Brazil	Testa red
336928		6	6	Brazil	Testa red
336929		6	6	Brazil	Testa red
336930		6	6	Brazil	Testa red
336937		5		Brazil	Origin Corrientes, Argentina. CIA 511. RCM 130
336939		6		Brazil	Local name Cacahue Roja. Origin Valencia, Spain. CIA 513. RCM 133
336941		6		Brazil	Local name Cacahue. Origin Valencia, Spain. CIA 540. RCM 194.
336942		6		Brazil	Local name Valencia. Origin Santiago, Chile. CIA 544. RCM 198
336943		5		Brazil	'Nani M.A.' CIA 545. RCM 199

PI No.[a/]	Type[b/]	No. of Plants Tested to PR-1-66	No. of Plants Tested to TEX-1-67	Immediate Origin of Accession	Remarks
336944		6		Brazil	Local name Yacundo. Origin Boukoko, French Equatorial Africa. CIA 548. RCM 211
336946T		4		Brazil	Origin market in Lima, Peru. CIA 642. RCM 404
336946P		4		Brazil	Origin market in Lima, Peru. CIA 642. RCM 404
336947		6		Brazil	Origin Paraguay. CIA 645. RCM 407
336948		6		Brazil	Origin Salta, Argentina. CIA 650. RCM 414
336949		6		Brazil	Origin Salta, Argentina. CIA 651. RCM 415
336952		6		Brazil	Local name Yungas. Origin market in Cochabamba, Bolivia. CIA 656. RCM 420
336953		4		Brazil	From cross Negro-4 X Fla. 249-40-B3 CIA 658. RCM 601
336957		5		Brazil	Local name Tatu branco. Origin Presidente Prudente, Sao Paulo, Brazil. CIA 772
336958		6		Brazil	Local name Paraguaio. Origin Rio Grande do Sol, Brazil. CIA 849. Testa red
336959		5		Brazil	Local name Paraguaio. Origin Rio Grande do Sol, Brazil. CIA 850. Testa dark-colored
336961		4		Brazil	Local name Roxo. Origin Brazil. No CIA number
336963		5		Brazil	H. 126-4. Intervarietal hybrid
336966		6		Brazil	H.128-1. Intervarietal hybrid
336967		6		Brazil	H.128-1 (Claro). Intervarietal hybrid
336969		4		Brazil	Co. 3-1. Colchicine-treated
336970		5		Brazil	Co. 6-1. Colchicine-treated
336972		6		Brazil	Co. 9-3. Colchicine-treated
336973		6		Brazil	Co. 11-7. Colchicine-treated
337298		4		Brazil	Testa red
337307		4		Brazil	Pods smooth. Testa red.
337344	Val	4		Argentina	Pods 2- to 4-segmented. Testa purple
337345	Val	3		Argentina	Pods 2- to 4-segmented. Testa flesh to pink
337347	Val	4		Argentina	Mixture. Pods 2- to 4-segmented. Testa purple or wine
337348		4		Argentina	Pods 2- to 4-segmented. Testa flesh, tan, or pink
337373		4		Argentina	Local name Negro Grande
337374		4		Argentina	Local name Colorado

PI No.[a]	Type[b]	No. of Plants Tested to PR-1-66	No. of Plants Tested to TEX-1-67	Immediate Origin of Accession	Remarks
337380		4		Argentina	
337421		4		Argentina	Originally from Joaseiro, Bahia, Brazil
337425		4		Argentina	Local name Maranhao
337426		4		Argentina	Local name Sapo Roxo V.27
337428		4		Argentina	Local name Soleval II
337431		3		Argentina	Local name Negro Riachuelo Originally from Paso Pesoa, Corrientes

a. Accession numbers assigned by Plant Introduction Section, Crops Research Division, Agricultural Research Service, U.S. Department of Agriculture, Beltsville, Maryland.
b. S indicates Spanish, V Virginia, and Val Valencia types.

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13. ABSTRACT

Accessions of Arachis hypogaea, A. glabrata, A. monticola, and several other legumes were tested to Puccinia arachidis cultures PR-1-66 (from Puerto Rico) and TEX-1-67 (from Frio County, Texas). Accessions PI 314817 and PI 315608 of A. hypogaea were physiologically resistant to both rust cultures. One hundred seventy-one accessions tested to both cultures, 68 tested only to PR-1-66, and four tested only to TEX-1-67 were susceptible. Five accessions of A. glabrata were immune, six non-peanut legume species were also immune, and one accession of A. monticola produced only small, weakly sporulating pustules when tested to PR-1-66.

14. Key Words

Peanut
Peanut rust
Arachis hypogaea
Puccinia arachidis
Resistance
Legumes
Arachis glabrata
Arachis monticola

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